Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-53. (Canceled)

54. (Previously Presented) A multielectrode for measuring a low amplitude bioelectrical signal at a detection site, the multielectrode comprising:

a carrier including at least one active electrode surface and at least a first and a second reference electrode surface; and

a processor in electrical communication with the carrier, the processor configured to:

receive the low amplitude bioelectrical signal using the at least one active electrode surface and the at least first reference electrode surface, wherein the low amplitude bioelectrical signal is received in response to an applied bioelectrical stimulus signal;

determine an evoked first bioelectrical potential difference a plurality of times, wherein the evoked first bioelectrical potential difference is based upon the low amplitude bioelectrical signal received using the at least one active electrode surface and the at least first reference electrode surface;

receive the low amplitude bioelectrical signal using the at least one active electrode surface and the at least second reference electrode surface, wherein the low amplitude bioelectrical signal is received in response to the applied bioelectrical stimulus signal;

determine an evoked second bioelectrical potential difference a plurality of times, wherein the evoked second bioelectrical potential difference is based upon the low amplitude bioelectrical signal received using the at least

one active electrode surface and the at least second reference electrode surface; and

sum the plurality of evoked first bioelectrical potential differences and the plurality of evoked second bioelectrical potential differences in order to increase the signal-to-noise ratio of the low amplitude bioelectrical signal.

55. (Previously Presented) The multielectrode of claim 54, wherein the processor is further configured to:

delay the recording of the first bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.

56. (Previously Presented) The multielectrode of claim 55, wherein the processor is further configured to:

invert at least one of the plurality of first bioelectrical potential differences recorded.

57. (Previously Presented) The multielectrode of claim 56, wherein the processor is further configured to:

delay the recording of the second bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.

58. (Previously Presented) The multielectrode of claim 57, wherein the processor is further configured to:

invert at least one of the plurality of second bioelectrical potential differences recorded.

59. (Previously Presented) The multielectrode of claim 54, wherein the at least one active electrode surface is substantially positioned in a central location on the carrier.

60. (Previously Presented) The multielectrode of claim 54, wherein each reference electrode surface is symmetrically positioned between the active electrode surface and an edge delimiting the surface area of the carrier.

61. (Previously Presented) The multielectrode of claim 54, wherein the size and shape of at least one of the reference electrode surfaces is substantially different from the size and shape of the active electrode surface.

62. (Previously Presented) The multielectrode of claim 54, wherein the carrier is formed of at least three sterilized needles, each needle tip constituting at least a portion of each respective electrode surface.

63. (Previously Presented) The multielectrode of claim 54, wherein the carrier further includes an insulation material which electrically insulates each of the respective electrode surfaces.

64. (Previously Presented) The multielectrode of claim 54, wherein the size and shape of the active and reference electrode surfaces is substantially similar so that the electrical impedance is substantially similar.

65. (Currently Amended) A multielectrode for measuring a low amplitude bioelectrical potential difference at a detection site, the multielectrode comprising:

a carrier including at least one active electrode surface and at least a first and a second reference electrode surface; and

a processor in electrical communication with the carrier, the processor configured to:

receive ~~the~~ a first low amplitude bioelectrical signal using the at least one active electrode surface and the at least first reference electrode surface, wherein the first low amplitude bioelectrical signal is received in

response to an applied bioelectrical stimulus signal;

determine an evoked first bioelectrical potential difference a plurality of times, wherein the evoked first bioelectrical potential difference is based upon the first low amplitude bioelectrical signal received using the at least one active electrode surface and the at least first reference electrode surface;

amplify and filter the plurality of first bioelectrical potential differences;

invert at least one of the plurality of first bioelectrical potential differences;

record the plurality of first bioelectrical potential differences;

receive ~~the~~ a second low amplitude bioelectrical signal using the at least one active electrode surface and the at least second reference electrode surface, wherein the second low amplitude bioelectrical signal is received in response to the applied bioelectrical stimulus signal;

determine an evoked second bioelectrical potential difference a plurality of times, wherein the evoked second bioelectrical potential difference is based upon the second low amplitude bioelectrical signal received using the at least one active electrode surface and the at least second reference electrode surface;

amplify and filter the plurality of second bioelectrical potential differences;

invert at least one of the plurality of second bioelectrical potential differences;

record the plurality of second bioelectrical potential differences; and

sum the plurality of evoked first bioelectrical potential differences and the plurality of evoked second bioelectrical potential differences in order to increase the signal-to-noise ratio of the low amplitude bioelectrical signal.

66. (Previously Presented) The multielectrode of claim 65, wherein the processor is further configured to:

delay the recording of the plurality of first bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.

67. (Previously Presented) The multielectrode of claim 66, wherein the processor is further configured to:

delay the recording of the plurality of second bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.

68. (Previously Presented) The multielectrode of claim 65, wherein the carrier further includes elevated portions to which each of the respective electrode surfaces are coupled.

69. (Previously Presented) The multielectrode of claim 68, wherein at least one of the respective electrode surfaces extends beyond the side of the elevated portion.

70. (Previously Presented) The multielectrode of claim 65, wherein the carrier further includes recesses into which each of the respective electrode surfaces are fitted.

71. (Previously Presented) The multielectrode of claim 70, wherein at least one of the electrode surfaces extend on the sides of the recesses.

72. (Previously Presented) The multielectrode of claim 70, wherein each recess is delimited by vertical edges elevated from the carrier, thereby preventing short-circuiting between adjacent electrode surfaces.

73. (Previously Presented) The multielectrode of claim 65, wherein the carrier further includes electrically conductive material that is attached to at least one of the electrode surfaces.

74. (Previously Presented) The multielectrode of claim 65, wherein the carrier further includes an adhesive for attaching the multielectrode to the detection site.

75. (Previously Presented) The multielectrode of claim 65, wherein the carrier is formed using a plurality of thin insulating layers, wherein the respective electrode surfaces are included within the plurality of thin insulating layers, and at least a portion of each respective electrode surface extends beyond the plurality of thin insulating layers.

76. (Previously Presented) A method for measuring a low amplitude bioelectrical signal at a detection site, the method comprising:

receiving the low amplitude bioelectrical signal using at least one active electrode surface and at least a first reference electrode surface, wherein the low amplitude bioelectrical signal is received in response to an applied bioelectrical stimulus signal;

determining an evoked first bioelectrical potential difference a plurality of times, wherein the evoked first bioelectrical potential difference is based upon the low amplitude bioelectrical signal received using the at least one active electrode surface and the first reference electrode surface;

receiving the low amplitude bioelectrical signal using the at least one active electrode surface and at least a second reference electrode surface, wherein the low amplitude bioelectrical signal is received in response to the applied bioelectrical stimulus signal;

determining an evoked second bioelectrical potential difference a plurality of times, wherein the evoked second bioelectrical potential difference is based upon the low amplitude bioelectrical signal received using the least one active electrode surface and the second reference electrode surface;

amplifying and filtering the plurality of first bioelectrical potential differences;

amplifying and filtering the plurality of second bioelectrical potential

differences; and

summing the plurality of evoked first bioelectrical potential differences and the plurality of evoked second bioelectrical potential differences in order to increase the signal-to-noise ratio of the low amplitude bioelectrical signal.

77. (Currently Amended) The method of claim 76, further comprising:

~~delaying the recording of the first bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.~~ recording the first bioelectrical potential differences after a predetermined time delay, wherein the predetermined time delay is the period of time that the bioelectric stimulus signal is applied.

78. (Previously Presented) The method of claim 76, further comprising:

inverting at least one of the plurality of first bioelectrical potential differences recorded.

79. (Currently Amended) The method of claim 76, further comprising:

~~delaying the recording of the second bioelectrical potential differences during the period of time that the bioelectric stimulus signal is applied.~~ recording the second bioelectrical potential differences after a predetermined time delay, the predetermined time delay being the period of time that the bioelectric stimulus signal is applied.

80. (Previously Presented) The method of claim 76, further comprising:

inverting at least one of the plurality of second bioelectrical potential differences recorded.